Pepper (Wm)

A CONTRIBUTION

TO THE

CLINICAL STUDY

OF

TYPHLITIS AND PERITYPHLITIS.

BY

WILLIAM PEPPER, M.D., LL.D.,

PROVOST AND PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA.

EXTRACTED FROM THE TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA FOR 1883.

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In approaching the discussion of these common and important affections it is necessary to bear in mind several important points in which the cæcum differs from the rest of the large intestine. Thus its peritoneal investment is deficient over the posterior part, which is generally quite firmly attached to the right iliac fossa by connective tissue, containing a small proportion of fat. Its anatomical relations, moreover, indicate that the semi-feculent materials passing from the ileum are destined to be retained in the cæcum to undergo some important action. The ileum at its lower portion rarely has a calibre greater than one-third that of the cæcum, a circumstance which must materially retard the progress of the contents of the latter, and a further detention is caused by the ileo-cæcal valve, which prevents all reflux, and by the position of the cæcum, which compels it to force onwards its contents in opposition to gravity. The view that the cæcum is the seat of an important part of the digestive process, either in the appropriation of any remaining nutritious elements of the semi-feculent chyme, the absorption of its watery parts, or the elimination of some excrementitious matter from the system, receives confirmation from the very rich vascular and glandular supply of the walls of this part of the intestine.

In addition to this, the cæcum has opening into it, usually at its lower and back part, the appendix vermiformis, a narrow, elongated, glandular process, varying from three to six inches in length, and having an average diameter about equal to that of a goose-quill, although its calibre is quite small. It is usually directed upwards and inwards behind the cæcum, and lies coiled upon itself. Its function appears to be the secretion of a viscid ropy mucus.

We thus see in the anatomical and physiological relations of the

cæcum strong predisposing causes of many morbid conditions. Those which we meet with most frequently are:—

1. Simple fecal accumulation or impaction, resulting from muscular atony of the bowels, from neglected constipation, or from the ingestion of some indigestible substance which lodges in the cæcum, and serves as the nucleus around which fecal matter accumulates.

2. Localized inflammation involving one or all of the coats of the cæcum or appendix, and varying in severity from a very mild affection to one of violent and rapidly destructive character. It is probable that such attacks may occur where there is no previous irritation or impaction to predispose thereto, but unquestionably they arise much more frequently and in much more severe forms when the cæcum is already weakened or irritated by habitual distension from constipation, by the habitual ingestion of indigestible and imperfectly masticated food, or by any other cause leading to chronic congestion and catarrh. Under such circumstances, a single improper meal, a sudden congestion from exposure, a strain or a blow, may suffice to excite a severe acute attack.

3. Perforating ulceration of the cæcum or appendix, at times apparently idiopathic, but usually associated with the presence of some foreign body or hard intestinal concretion.

4. Inflammation of the pericæcal connective tissue, either primary or resulting from extension of inflammation from the walls of the cæcum, and frequently ending in suppuration.

So much attention has been bestowed on the operative treatment of these cases, since 1867, when Willard Parker published his mode of operation, that it is now important to emphasize the fact that, if I may judge from my own extensive personal experience, recovery results under appropriate treatment, without any occasion for surgical interference, in a very large majority of cases of typhlitis and perityphlitis, both in children and adults. Time will not permit the quotation in full of the records of the numerous cases I could adduce in illustration of this statement, and I prefer to limit myself at this point to the history of a single case, which is interesting in its relations to diagnosis as well as to treatment.

Case I.—E. S., age 16, a vigorous athletic lad, had been overexerting himself by study and late hours. In this sensitive condition he ate copiously of very indigestible food, and afterwards exposed himself to severe cold. He was taken sick, and almost immediately seemed very ill. There were present fever, severe abdominal pain referred to the right iliac region, frequent uncontrollable vomiting, and, after one or two small evacuations during the first forty-eight hours, obstinate constipation. Opium by the

rectum, calomel in small and frequently repeated doses, with counter-irritation to the abdomen, constituted the treatment at first. By the third day, when I saw him in consultation with Dr. Herbert Norris, the attending physician, the vomiting had been on several occasions distinctly fecal. The abdomen was greatly distended and extremely sensitive, so that it was impossible to determine whether there was any circumscribed swelling in the region of the ilio-cæcal valve, to which point, with the hypogastrium, the pain was referred. The temperature was about 103° Fahr., without corresponding elevation of the pulse-rate, which did not exceed 100. The favorite decubitus was dorsal with flexed thigh, though there was considerable restlessness. A blister was applied over the right iliac fossa, warm cataplasms kept over the abdomen, calomel in divided doses, one-eighth grain every three hours, substituted for the larger doses of one-fourth grain every two hours which he had been taking; also a suppository of quinine and opium, given by the rectum, so as to keep him mildly under anodyne influence. No nourishment was given save teaspoonful doses of koomis, chicken-water, and carbonated water. Vomiting ceased after the fourth day. The calomel was continued until about fifteen grains in all had been taken; no salivation being produced. No effort whatever was made to open the bowels. Opium and quinine were given freely by the rectum, and were gradually diminished as the fever and pain lessened. The fever subsided slowly, but the pulse fell more rapidly, and by the eighth or ninth day became slower than natural, about 60 in the minute. There was some return of thirst and desire for nourishment, but only the above articles were given in very small doses. The bowels remained closed for thirteen days, at the end of which time a natural and thoroughly digested evacuation occurred spontaneously, without mucus or blood. The subsequent convalescence was very carefully managed, and after strength and power of digestion were regained he was sent abroad for several months, and returned in good health, which has continued uninterruptedly.

The symptoms in this severe case, though somewhat different from those ordinarily met with, serve to illustrate the acute attacks of typhlitis.

The pain, which is usually the earliest and most marked symptom, appears suddenly, and is referred to the right iliac region; though, as here, the whole lower segment of the abdomen may be the seat of excessive pain and tenderness, due to implication of the peritoneum from an early period of the case. The pain is constant, but with spells of exacerbation. The patient lies on the back or towards the right side, with the right thigh flexed on the pelvis.

The abdomen is full or even distended, the right iliac fossa especially so; palpation is difficult, owing to the great tenderness, but in many cases, even from an early period, a more or less distinct tumor can be detected in the region of the cæcum. In the case of E. S. the tenderness and general distension were such that it was impossible to decide as to the presence or absence of this symptom. Tumor is of course more marked in cases where there is impaction, or where the pericæcal tissue is involved with considerable infiltration and exudation. In 17 out of 48 cases of acute inflammation of the cæcal region, recovering without abscess, a distinct tumor was present. Of these 48 cases, 19 occurred in children under fifteen years of age, in only 3 of which distinct tumor was present. In proportion to the extent and early appearance of tumor is the liability to subsequent suppuration.

Constipation is almost invariably present; only in rare cases are there loose movements, due to irritation of the lower bowel. When there is considerable fecal accumulation, severe tormina may exist from movements of flatus; and the distended cæcum may press upon adjacent nerves and cause pain shooting down the right thigh, or a numbness and even œdema of this part, with retraction of the right testicle. In the above case the constipation was marked, and attention is especially drawn to the fact, that the bowels were allowed to remain unopened for thirteen days, at the end of which interval a natural and thoroughly digested movement occurred. The difficulty of deciding as to the amount of fecal accumulation present; the fear lest the existence of irritating contents in the inflamed cæcum may favor ulceration, perforation, and pericæcal abscess; and the dread lest, on the other hand, the attempt to secure a movement of the bowels may prolong or rekindle gastric irritation with vomiting, disturb nutrition, and aggravate the local lesion; combine to render the management of this one condition of constipation in typhlitis a matter of excessive difficulty. The practical lesson enforced by such cases as the above would seem to be, that, so long as there are fever, local soreness, and pain, it is better to limit our efforts to the relief of pain and inflammation, and to restrict nourishment to the narrowest limits.

Vomiting is an almost constant symptom, and it may be frequently repeated and difficult to control, especially if purgatives or other irritating remedies have been given. It is comparatively rare, however, for it to be so distinctly fecal as in the case of E. S.

The attack is not usually ushered in by any chill or rigor; but marked fever soon appears, the temperature ranges from $101\frac{1}{2}^{\circ}$ to $103\frac{1}{2}^{\circ}$; the pulse is disturbed; the skin hot, the tongue furred, and

thirst and restlessness are extreme. I have repeatedly noticed a marked disparity between the temperature and pulse, depending upon an unnatural slowness of the latter. Not only may this obtain after the subsidence of the acute symptoms, when I have noted the pulse at 60, 50, or even lower; but while they are still pronounced, and the temperature is decidedly elevated, I have repeatedly observed that the pulse was not correspondingly accelerated (in a lad of 19, pulse 96, temperature 103½°), or even that with milder acute symptoms the pulse was normal or subnormal throughout.

I have observed the same thing in other forms of subacute localized peritoneal irritation, seemingly dependent upon an increase of the inhibitory pneumogastric influence; and as regards cæcal inflammation, it has seemed to occur in those cases where there was but a slight implication of the cæcal peritoneum. Such slowness of pulse has also been oftener noted in relapses than in primary attacks.

Case II.—A. B., seen in consultation with Drs. L. Bauer and Emil Fischer, was engaged in an ice-cream manufactory, and exposed to extreme and sudden changes of temperature. He had a mild attack of perityphlitis from which he recovered, but returned too soon to his occupation, and was seized with a second and more severe attack. The pain and tenderness were marked, the vomiting frequent, fever moderately high, and there was a distinct ovoid lump in the right iliac fossa, extending unusually high up along the ascending colon. After the acute symptoms had abated somewhat, although vomiting was still readily excited and the tumor was unchanged, there was an abrupt fall of temperature, and such a rapid fall in the pulse-rate, down to 42, as to excite anxiety. Nothing occurred, however, to interrupt convalescence, during which the pulse continued very slow; and with extreme care in diet, prolonged rest in bed, and very cautious medication, complete recovery followed.

This second case illustrates one of the peculiarities about these cæcal affections that has in my experience been the cause of the greatest amount of trouble. I refer to the liability to relapses, which in many cases is very strong, and in a few instances has proved almost insuperable. According to the violence of the original attack, the damage done to the affected part, and the constitutional susceptibility and tendencies of the individual, the subsequent course of such cases varies greatly. In some instances I have observed a series of successive attacks, five, eight, or even twelve in number, after each of which the local symptoms subsided

more or less completely, showing that no grave or permanent lesion was established. Of course the general health and nutrition suffered greatly, but with persistent hygienic and dietetic care, and suitable medicinal treatment, complete recovery has ensued. In less favorable cases, on the other hand, after the first, the second, or the third attack, the disease assumes a chronic form; the evidences of established local disease present themselves in the cæcal region; the general health suffers greatly; and it will only be by protracted and most vigilant efforts that the tendency to progressive and destructive changes can be averted. Fortunately, even when cæcal tumor with local tenderness, disturbance of digestion, and a liability to exacerbation on slight provocation, have existed for a considerable time, it is possible, unless a tendency to ulcerative perforation of the cæcum has been established, to effect a satisfactory cure. As an illustration of the more mild and favorable type of chronic or recurrent typhlitis, the following may be quoted:—

CASE III.—J. L., æt. 19, was seen in consultation with Dr. W. F. Norris. Several years previously he had two attacks of typhoid fever, and subsequently at least two attacks of slight cæcal irritation. Towards the close of December, 1879, he was strained in a tussle, and had immediately afterwards a mild attack of typhlitis, with pain, extreme tenderness, fever, a yellow tongue, anorexia, a little vomiting, but not decided constipation. There was deep-seated, slight but distinct thickening, but no positive mass. He was treated by blisters, opium suppositories, blue mass and ext. col. comp. in small doses so that a daily soft evacuation was secured, absolute rest and strictly liquid diet. The fever subsided in about five days, and he improved, and, by January 5th, had entirely normal temperature. In about three weeks, following a short drive, he took cold, and had a relapse lasting four days, with a renewal of the local and digestive symptoms, and a maximum temperature of 102°. Similiar treatment was pursued. Convalescence was quite rapid, but he was still confined to the house, when, February 12th, he had a third attack, fever rising to 102.5°, pulse 104, with a renewal of local symptoms. By February 16th, the pulse was down to 50, and the temperature 97.8° in the morning. The temperature soon became normal, but the pulse stayed low for twelve or fourteen days. After this attack he was kept in bed until June 15th, when he began to move about very cautiously. During all that time his diet was most rigidly supervised, and consisted chiefly of fluids, such as milk, arrowroot, broths, and thin custard; soft egg and scraped beef with delicate stale bread were occasionally allowed.

Extreme care was paid to the maintenance of uniform temperature in the room as well as to his body and bedclothing.

Despite this care, however, there were successive attacks upon March 11th, lasting three days; April 8th, lasting four days; May 12th, lasting three days; May 28th, lasting two days; June 12th, lasting two days; June 28th, lasting two days; July 6th, lasting two days; September 12th, very slight, lasting only one day: in all, 11 attacks.

During the first part of this time he steadily lost weight until his weight fell to about 114, but subsequently it gradually rose to 136 on September 4th. It was noted in regard to these attacks, that they progressively decreased in severity and duration. They were all attended with the same symptoms above mentioned; vomiting usually occurred once or twice at the onset; the tongue always grew thick and heavily coated; there was a great increase in the local tenderness with pain, and sometimes slight increase of thickening to the outer side of cæcal region. The pulse rarely rose above 100, the temperature rapidly attained its maximum, not exceeding 102 or 102.5°, and, as has already been stated, after each attack both temperature and pulse continued subnormal for a number of days, the temperature rising to normal more rapidly. In addition it was noted in the later attacks that the feces were flattened as if they had passed through a contracted space, and there were occasionally masses of whitish-yellow mucus, tenacious and stringy, and on two or three occasions, conical masses as though casts of the appendix.

The treatment pursued, in addition to the rest, diet, and hygienic care above mentioned, consisted in the prolonged use of small doses of nitrate of silver with opium, and later of mineral acids with strychnia, and repeated blistering. On the occasion of each attack the diet was made absolutely liquid, and small doses of blue mass and colocynth were given so as to cause one slightly soft stool daily.

After October, 1880, he appeared to regain fair health, and had no further trouble until May 20, 1882, a period of about twenty months, when, probably in consequence of taking cold after eating some indigestible food, he had a severe attack, temperature 103.8°, pulse 118, with severe local symptoms, lasting several days, and followed by a return of subnormal pulse, though this time the temperature did not fall below the normal. He was again strictly confined to bed, and the previous treatment was resumed. A second attack occurred July 2d, but it was brief and of slight severity, and convalescence was established by July 18th. After this he again seemed restored to fair health, although he has not regained his

former health, and has been easily fatigued, and has been obliged to be careful of his diet. Quite recently, May 1, 1883, without adequate cause, though, perhaps in consequence of over-exertion, there was a slight increase of local soreness with return of mucus in stools, and he was again confined to bed. There was no rise in temperature, but extreme muscular prostration. Subsequently to this he regained strength satisfactorily, and now seems quite well. The impression we received was, that, in consequence of the early attacks of typhoid fever and subsequent irritation in the cæcal region, slight thickening contraction of the cæcum had occurred, which had favored the frequent recurrences of attacks of typhlitis above related.

Among the points of peculiar interest about this case, in addition to the large number of relapses, may be mentioned the apparent yet deceptive periodicity, which on careful investigation was found to depend upon a correspondence of the relapses with marked barometric variations; the invariable occurrence of subnormal pulse and temperature after each attack; and the absence of distinct iliac tumor and of decided constipation.

To further illustrate the favorable conclusion of chronic typhlitis, even in cases where more definite local lesions have been developed, I would briefly refer to the following instance:—

Case IV.—Mr. F. P., was sent to me by Dr. J. H. Twitmire, of Sharpsville, Mercer County. In May, 1880, at 28 years of age, he had an attack of acute typhlitis. After a very hard day's work he ate a hearty meal of sardines; next day nausea and vomiting occurred; but despite this he travelled that day, though there was pain in the cæcal region. He was confined to bed for two weeks, and then seemed to recover, but in October of same year had a slight attack, and a much more severe one in December, which confined him to bed for four weeks. Subsequently, in the early part of 1881, there were three sharp attacks, with fully developed symptoms, each one lasting about a week. In the last two attacks there was detected for the first time distinct iliac tumor. I saw him first in May, 1881; he had then lost over twenty pounds, was anæmic and weak. There was an indurated swelling in the region of the cæcum, which was but slightly sensitive on pressure. The tongue was pale and flabby; the skin relaxed; the bowels irregular, the stools at times loose with mucus; the abdomen full, at times slightly tender, with sharp cutting pains across it; appetite good, but digestion delicate.

He was confined to his bed for a number of days, and was then allowed to exercise cautiously for gradually increasing periods.

His diet was rigidly restricted. A flannel abdominal belt was ordered, and strict attention paid to every detail of hygiene. Repeated blisters were applied to the cæcal region; and he took a prolonged course, interrupted at suitable intervals, of the following:—

Argenti nitratis, gr. vj.
Ext. belladonnæ, gr. iv.
Ext. opii, gr. ij.
Ft. mas. et div. in pil. no. xxx.
S.—One thrice daily.

Soon after I saw him there was a slight attack in consequence of imprudent exertion, but after this improvement was rapid. He was able to spend the summer in travelling on the lakes and at Duluth, and returned home in September, 1881, comparatively well, having gained considerably in weight. He returned gradually to business, but continued to observe strict care as to his diet, exertion, and exposure. From time to time there were symptoms of irritation, not amounting to an attack, but attended with stiffness, soreness, and distension of the abdomen. These were greatly relieved by rest, more carefully restricted diet, and a teaspoonful thrice daily, in water, of—

Chloroformi, gtt. ccxl.
Tr. cardamomi comp. q. s. ad f℥iij.—M.

An occasional blister was used, and the above pills were taken occasionally for short periods. A slight attack occurred in January, 1882, after which his recovery gradually became complete, and he continued in excellent health. The cæcal tumor gradually and completely disappeared.

Finally, as an example of the course of chronic typhlitis, with numerous exacerbations, where severe local lesions have been established, ultimately leading to perforation, abscess, and death, the following history is given at some length:—

Case V.—H. G. W., was first seen by me July 1, 1876, in consultation with Dr. Santee; he was subsequently seen on various occasions by Drs. Agnew, Dunton, and S. Weir Mitchell. He had received a blow three years previously in the right iliac region, and sufered his first attack of acute typhlitis in 1876, at the age of 24, in consequence of a severe wrench of his body. He made a good recovery, although there remained a slight circumscribed and indurated swelling in the region of the cæcum. He was able, however, to return to his business, and continued in apparently good health for several months. He stated subsequently, however, that he had continued to have transient spells of pain

in the cæcal region, increased by pressure or walking. He had been accustomed to have two stools daily, and this also continued; the stools being at times unformed or mush-like, especially when these signs of cæcal irritation increased. He attended regularly to business, however, until June, 1876, when, in consequence of indiscretions in diet and the contraction of a severe cold, a second attack of typhlitis and perityphlitis occurred, with all the characteristic symptoms, and with marked increase in the local symptoms. He was now treated with great strictness, was confined to bed for some weeks, had a series of blisters applied to the right iliac fossa, took a course of small doses of calomel with opium, and, when the acute symptoms had subsided and it was clear that the case would not terminate in suppuration, he was placed on the use of nitrate of silver in conjunction with skimmed-milk diet. This course was pursued because after convalescence began there still remained a distinct hard lump in the iliac fossa, evidently involving the walls of the cæcum and the pericæcal cellular tissue, and in addition to this there was a tendency to occasional unprovoked diarrhœal stools, with some mucus, justifying a suspicion of ulceration of the cæcum. The possibility of pericæcal abscess was most carefully discussed, but it was negatived, and the accuracy of this opinion was shown by the fact that gradually during the next six months there was restoration of good health, with progressive decrease of the hard swelling, until it could merely be detected on deep palpation, and with complete relief of digestive disturbances. The use of nitrate of silver was pushed in this case until discoloration of the gums was produced. (A careful study of the nature and value of this silver-line on the gums was published by me in *Transactions of Philadelphia College of Physicians*, vol. x. p. 39.) He again resumed his regular business, continued well for a number of months, and was married in May, 1878. Soon after this, apparently in consequence of excessive application to business, getting into poor condition, and then contracting a heavy cold, a fresh attack of inflammation was established. This proved more serious than any previous one, and despite the most rigid treatment it left behind serious and enduring lesions of the cæcum. Pain began to be felt along the branches of the lumbar and sacral plexuses of nerves, and permanent flexion of the right leg on the pelvis appeared. The iliac tumor was resonant, though very hard, and at no time could the least fluctuation be detected in it. There were no constitutional symptoms to indicate suppuration, and it appeared that the condition was one of ulceration of the cæcum with chronic inflammation of its walls and surrounding

tissues. Improvement again occurred, but from this time onwards the history of the case was of a series of distressing attacks, provoked by slight causes, and proving more and more difficult to control, and leaving more and more serious conditions behind, and with increasingly poor health in the intervals. The right leg became firmly fixed at a right angle with the pelvis, and grew much emaciated. Pain was of constant occurrence, and was complained of in the back near the right kidney, along the crest of the ilium, as well as down the right leg. Digestion became very sensitive, and, although care in diet was constantly exercised, a tendency to diarrhœa was frequently observed. No pus or blood was ever found in the stools, but not rarely mucus was present. Excepting at the times of the recurring exacerbations, there was for a long time no elevation of temperature, and very little acceleration of pulse. On one occasion in the summer of 1878, an attack occurred of so much violence and attended with so much inflammatory exudation into the iliac fossa that Dr. Dunton, of Germantown, under whose care he then was, Dr. Agnew, and myself confidently expected suppuration, and were prepared to operate. The symptoms again subsided, however, after confinement to bed for nearly six months, and, as on other occasions, a remarkable degree of improvement occurred. On another occasion during the last year of the case, while he was at Hot Springs, Arkansas, there was a sudden improvement in the condition of the right leg, which became movable, so that he could almost straighten it, and could walk a short distance with merely a cane, instead of using the crutch with a rest for his foot, to which he had been obliged to resort for a couple of years. This improvement proved very temporary, and within a few weeks the contraction was as great as ever. I could not satisfy myself by the most careful questioning, that, at the time of this sudden and transient improvement, there had been any discharge of pus; and yet it seemed not improbable, that a circumscribed abscess behind the cæcum, which had been pressing upon the nerves and the psoas muscle, had made its escape in some direction, and thus for a time had afforded relief. I saw him rarely after his return from Arkansas in the fall of 1881, and not at all after June, 1882, as I went abroad then, and he placed himself under the care of a homœopathic practitioner. From then until the date of his death, May, 1883, his condition grew worse and worse. Digestion was more sensitive, and diarrhœa more common; pain was constant, requiring anodynes; hectic fever appeared, with a tendency to night sweats, and with constantly progressive emaciation. Very shortly before death, evi-

dences of abscess were detected on the inner side of the right thigh. It was opened by Dr. William Hunt, and gave exit to a quantity of fetid gas and pus.

The post-mortem examination was made very carefully by Dr. Reichert, who has kindly furnished me with the following notes, and also placed the cæcum in my hands for examination.

Autopsy.—Great emaciation. On right-hand side the omentum, which contains very little fat, is attached to the abdominal parietes by a broad adhesion one and one-half inches long, this adhesion being over cæcal region. No fluid in peritoneal cavity, nor evidences of recent peritonitis. Stomach distended with gas. All viscera anæmic. Intestines everywhere distended with gas. No evidences of any general peritonitis, either recent or old.

On the outer side of cæcum there were evidences of an old inflammation, there being considerable adhesions. A small cystoid cavity was found between cæcum and abdominal parietes in the midst of adhesions, and in which was some gelatinous fluid.

It was difficult to tear cæcum loose from posterior wall. Behind cæcum the cavity of a fecal abscess was opened, and on examining the cæcum a hole was found in the posterior wall sufficiently large to admit a lead pencil, this hole communicating between the bowel and abscess. The hole had a smooth edge, evidently a cicatrized "button-hole." The cæcum itself was greatly contracted, and its walls were thickened and indurated from chronic inflammation. The abscess was traced beneath the fascia to the tissues behind the lower end of the right kidney towards the spinal column; a little above the level of the second lumbar vertebra. No disease of the spinal column.

Tracing the abscess downwards *one* sinus passed under Poupart's ligament to the front of thigh, close to the anterior superior spinous process; contents fecal. A *second* sinus, passing from the back of cæcum, passed alongside of the psoas tendon, then under Poupart's ligament to the inner side of thigh, burrowing back along ramus of ischium as far as tuberosity, which bone was denuded of the periosteum, and in pouch were found some small fragments of bone. No fecal matter was found in this pouch, only broken-down pus. (This pouch was punctured with an aspirator needle on the 11th inst., and about two ounces of broken-down pus drawn therefrom.) At the point of bifurcation of the above sinuses another sinus was found running back along the internal iliac artery into the pelvis for about an inch. Contents of this sinus fecal. All of the sinuses were lined by bluish-green inflammatory material.

Right kidney healthy macroscopically. Capsule easily separated. No cysts.

Liver greatly enlarged, quite yellow, pale, very friable. Gall-bladder distended, with pale yellowish bile, and contained two gall-stones. Spleen normal. Stomach distended with gas.

Lungs anæmic, but healthy—some hypostatic congestion. Old adhesion at base of right lung. No fluid in pleuræ. Heart healthy; very little fluid in pericardium.

It was the opinion of all who were present at this examination, that the original lesion had been chronic typhlitis with subsequent ulceration of the posterior wall of the cæcum, and that the perforation of the bowel at this point and the escape of its contents had started the formation of the sinuses above described. It is difficult to determine the date of this perforation, but it may not have been until within three to six months before death. The small cystoid cavity with gelatinous contents found on the outer side of the cæcum, imbedded in old inflammatory exudation, shows that at one time abscess formation was imminent, but there is nothing to indicate that an operation would have been of service. I cannot recall any question of practice which has given me more anxiety than that of operation in the above case, and on several occasions I summoned Dr. D. Hayes Agnew to discuss it with me, but invariably with the result of deciding that there were no adequate grounds for such a step.

Space forbids the insertion here of the notes of two painfully protracted cases of chronic typhlitis without perforation in adults, which came under my notice only after serious organic lesions had been established, and where repeated exacerbations occurred with the familiar symptoms, and with constantly progressive impairment of general health, derangement of digestion and local distress in the intervals, but without any symptoms of suppuration, and where the post-mortem examinations showed dense adhesions of the cæcum to the surrounding tissues, immense thickening of the walls of the bowel, extreme contraction of its cavity and disintegration of its mucous membrane, so that this part of the intestine had come to resemble merely a hard shrunken fibrous or cartilaginous capsule.

It must not, however, be supposed that when suppuration occurs, as it frequently does, either in consequence of or independently of perforation of the cæcum or its appendix, the symptoms and local signs are always so clear and positive that no difficulty will be experienced in making a diagnosis. So far from this being the case, it is not too much to say, that the unjustifiable delay permitted in many cases of typhlitis, whilst hoping day after day for the more definite detection of suppuration, is the direct cause of many avoidable deaths. It is true that ordinarily the approach of suppuration will be

announced by a change in the constitutional symptoms, by the occurrence of rigors followed by sweats, febrile movement of a remittent or hectic type, and increased acceleration of pulse. But, on the other hand, it is certain that, after an abscess has already formed, the general symptoms may merely indicate increasing gravity of the case, without presenting the above indications of suppuration. So, also, it must be borne in mind, that the existence of a pericæcal abscess may be unattended with the local appearances which usually accompany suppuration. In many cases where a considerable amount of pus has been found, the cæcal tumor immediately before the operation was hard, absolutely without fluctuation on palpation, and resonant on purcussion. This may be due to the fact that at times the pus is chiefly confined behind the thickened and inflamed cæcum, which is pressed forward against the abdominal wall; or, again, that the pus, either collected to the outside or in front of the cæcum, is so compressed by the tense transversalis fascia and abdominal muscles that fluctuation cannot be detected until an incision has been carried down to or through this fascia. The resonance which can then be detected on percussing over the abscess may be recognized as transmitted, and not dependent upon a collection of gas immediately beneath the surface. When the cæcum is pressed forward against the abdominal wall, the resonance will naturally be distinct and superficial. Occasionally, moreover, the abscess itself contains gas, when the resonance will be even more distinct on very light percussion; and in such cases, as the abscess approaches the surface, the skin becomes doughy and dark colored, and upon palpation a distinct sense of emphysematous crepitation may be obtained. The following case illustrates well some of the above points, while at the same time it exhibits clearly the absolute necessity for prompt operation and the brilliant results obtained.

Case VI.—P. F. M., æt. 38, commission merchant, who had been exposed to a great deal of mental anxiety, and had been out of condition in consequence, was attacked with typhlitis on the last day of December, 1882. The onset was gradual: he complained of pain in the right iliac region, with excessive tenderness and a distinct swelling in that region. The pain was not sufficiently severe to prevent his attendance to business, involving much walking. On January 5th he visited New York, and on his return in the evening of the same day he called in Dr. J. V. Kelly, of Manayunk. At that time there was a distinct tumor in the right iliac region, which was the seat of much pain and extreme tenderness. Temperature about 102° and pulse 95. He was treated by absolute rest, free leeching over the tumor, opium

and quinine internally, and the application of poultices. Although there was some relief from the pain, the indurated mass still continued in the iliac fossa. The pulse continued over 100, and the temperature ranged between 100° and 102°, and even 104°. There were also some vomiting, anorexia, and obstinate constipation. I saw the case with Dr. Kelly on the tenth day, when the question of exploratory operation was discussed, but owing to the extreme hardness of the tumor and the absence of sweating, it was decided to postpone it for the present. Towards the close of the second week several free sweatings occurred; the temperature continued high and the pulse rapid. I saw him again on the seventeenth day, and, although the mass was still hard and without any sense of fluctuation, and although resonance could be developed by careful percussion, and there was no infiltration of the abdominal walls over the seat of the disease, it was decided to call Dr. W. W. Keen in consultation, with a view to having the operation performed, which was done by him successfully on the twenty-first day.

An incision four inches in length was made through the skin, superficial fasciæ, and the three abdominal muscles, when, on inserting the finger to see if he could feel any fluctuation, on the slightest touch of the fingers, pus burst out through the opening. The pus was very offensive, distinctly fecal in odor, measuring about one pint. The fingers were introduced their whole length without touching bottom, and it was thought unwise in view of the thin walls to pursue digital examination any further. The cavity was then washed out with a carbolized solution, and a double drainage-tube, horseshoe-shape, introduced, and as judged by this the cavity was probably four and a half inches in depth. The bowel was not seen, and no foreign body was detected. Fully half a pint of pus was discharged during the succeeding twenty-four hours; afterwards the quantity rapidly diminished. The wound was daily washed out with the carbolized solution, and the whole operation was done strictly antiseptically. At the end of the first week the drainage-tube was gradually removed, and was entirely withdrawn in the third week, after which the wound rapidly healed. The temperature steadily diminished until a little accumulation of pus took place at the end of ten days, when he had a chill and a rise to 102°, but this promtly disappeared on the re-establishment of free drainage, and the patient recovered perfectly.

In another and equally successful case the operation was performed by Dr. C. T. Hunter, on the thirtieth day of the disease, when a fluctuating tumor could be readily recognized.

It seems difficult to realize, in view of the frequency of these

cæcal affections, and the large proportion of cases in which suppuration occurs, with frequently fatal results, that the first operations for its relief were by Willard Parker in 1843, and by Hancock in 1848. Although Parker performed the first operation, Hancock has the credit of having published the first record of a case so treated, in the *London Medical Gazette*, 1848, p. 547; but it may be confidently stated that the full recognition and acceptance of this operation dates from the publication of Parker's first paper in the *New York Medical Record*, in 1867. The operation is so simple, and, if properly performed, so free from danger or complications, that it is to be hoped that hereafter the indications for its performance will be more clearly recognized and more constantly borne in mind, not by surgeons only, but by the general practitioners under whose care such cases come, and by whom the necessity for the operation must be recognized, even if they prefer to call in a consulting surgeon for its performance.

In deciding then upon this question, it may be said that no doubt can longer be permitted as to the necessity for operating as soon as the existence of pus is recognized or even strongly suspected. In support of this statement, if support be needed, I quote the following figures from a valuable paper on perityphlitis, by Dr. Robert F. Noyes, of Providence (*Trans. R. I. Med. Society*, vol. ii. Pt. VI. 1882, p. 507), which has come into my hands since I presented the present informal communication to the meeting of the Pennsylvania State Medical Society. In 1872, Dr. Bull (*N. Y. Med. Journ.*, 1873, xviii.) analyzed 67 cases of perityphlitic abscess; of this number there were 32 deaths, a mortality of 47½ per cent. Although some of these cases were saved by operation, the majority occurred prior to the general adoption of Willard Parker's procedure. In a series of 100 cases of perityphlitic abscess, treated by operation, which have been collected by Dr. Noyes (*loc. cit.*), the mortality was only 15, or 15 per cent. To this table may now be added the two successful cases here reported.

Of course it is to be understood that our remarks and the above figures apply to ordinary cases of typhlitis or perityphlitis, with the formation of a circumscribed abscess with or without perforation of the cæcum. But the case is very different in regard to the unfortunate instances where there occurs perforation of the appendix vermiformis without any well-defined tumor or circumscribed collection of pus. The symptoms are not necessarily urgent, the question of operation can scarcely arise, and the occurrence of the perforation is usually marked by the symptoms of rapidly spreading and fatal peritonitis. I have met with not less than six fatal

cases of this character, and Noyes states that of forty-seven such cases analyzed by Dr. Lewis, forty-six died. It is unquestionably true that a few cases of this kind recover owing to the formation of adhesions which circumscribe the fecal matter and pus escaping from the appendix, and in all probability a small percentage of such cases are included in Noyes's table, though it is impossible to discriminate them. A number of years ago (*Amer. Jour. Med. Sci.* 1867, vol. 54, p. 148), I reported the results of an autopsy made upon an old man, who died from vesical hemorrhage, in whom I found that there had, at some unknown previous time, been perforation of the appendix. But such a favorable result must be extremely rare.

It is impossible, however, to lay down positive rules to govern the time when the operation for suspected cæcal abscess shall be performed. It is not safe to wait until fluctuation appears, for we have seen that this may be absent when a considerable amount of pus is present. It is not safe to wait for chills or sweatings, for these may be delayed until the danger of the case is greatly increased by burrowing of pus or by perforation of the bladder, rectum, or some hollow organ. Even the well-defined or circumscribed tumor may not be present, but merely a diffused, poorly limited, and resonant swelling, and yet a considerable amount of pus may be collected behind the cæcum. It is not possible to fix a date before which the operation should not or after which it should be performed: the earliest date at which it has been done is the fifth day; more commonly it is called for between the eighth and eighteenth day; but as stated in a very practical editorial in the *Medical News* for Sept. 2, 1882, it has been performed successfully after even two years.

Every effort should be made then to prevent suppuration, and if after eight or twelve days there is any improvement, even slight, we should persevere in our attempt to secure resolution and a final complete cure. But if, on the other hand, after such a period the general symptoms persist or grow aggravated, or still more if they assume a hectic type, and if the local conditions remain the same, or still more, if increased prominence of the swelling, discoloration or œdema of the abdominal wall, or fluctuation becomes apparent, an exploratory puncture or incision should certainly be made, to be followed by the complete operation, as recommended by Parker, if the presence of pus be demonstrated.

The general character of the treatment to be adopted in acute typhlitis has already been indicated. Its prime object is to reduce the inflammation so that suppuration shall not occur. There is scarcely any danger of a fatal result unless an abscess forms.

Indeed there must be very few, if any, cases on record of acute typhlitis proving fatal, in which post-mortem examination did not show the existence of perforation of the cæcum or appendix. When the patient is first seen, if the pain and signs of local inflammation are not severe, and particularly if indigestible articles have recently been eaten, or there is evidence of fecal accumulation, a mild laxative should be given. This may consist of small doses of a saline, as liquid citrate of magnesia, repeated at short intervals, or of calomel, as for instance one-eighth or one-fourth grain every hour or two hours, until the bowels are opened or until several grains have been administered. From time to time the attempt may be made to assist the action of the laxative by a tepid unirritating enema. So soon as one free movement has been secured, no further laxatives should be permitted. Nor if, after a moderate trial of the gentle remedies above recommended, the bowels remain closed, should any further effort be made. The irritating contents of the bowel have done what harm they could, and their presence at this stage is less injurious than are attempts to force them away by irritating purgatives. I would refer to the result in Case I. as an illustration of this point of practice. From the earliest moment absolute rest is essential, the bed-pan must be put in use at once, and even the restless motions of the patient should be discouraged or quieted by opiates.

The vomiting should be promptly allayed. The surest way to secure this end is by avoiding the introduction into the stomach of all save minute amounts of light, soothing, liquid nourishment, and of small doses of sedative laxatives, such as effervescing citrate of magnesia or of calomel. Small doses of opium by the rectum or of morphia hypodermically will assist powerfully in quieting the stomach, and will not interfere seriously with the laxative action sought. If even the unirritating articles above mentioned are rejected, the stomach must be allowed absolute rest for a number of hours, and the use of opiates be continued. This will usually effect the object in view, and then the administration of cracked ice, spoonful doses of champagne, whey, koumiss, chicken-water, may be cautiously resumed. Calomel, it seems to me, should be continued throughout the acute stage, the size and frequency of the doses being reduced after its laxative effect is no longer sought, so as to avoid the risk of salivation.

Opium is the most important remedy; and so soon as the question of the early movement of the bowels is settled, sufficient doses should be given to insure relief of pain and moderate repose. Suppositories of the watery extract appear the most manageable and

unobjectionable form, and a further advantage of these is that sulphate of quinia may be combined with the opium in doses proportionate to the age or degree of fever. Quinia is undoubtedly not so efficacious when given in suppository as it is by the mouth, or when thrown in solution into the rectum. But if the suppositories are freshly made, and particularly if a very small amount of dilute sulphuric acid is added, it is easy to obtain full cinchonism; and in cases such as we are considering this constitutes the best form of administration. It is desirable to have two forms of suppositories, one of quinia alone, the other of quinia and opium; so that five or six grains of quinia may be given every three hours regularly, while one-half to one grain of ext. opium may be given at the same time, or less frequently if not required by the symptoms.

If the evidences of local inflammation are severe, leeches may be applied in a circle around the position of the cæcum, leaving the cæcal region for the application of a blister, which seems to me desirable on the third or fourth day. Light warm applications, as a batt of uncarded wool, protected outside by thin rubber sheeting or oiled silk, or a skilfully made poultice, should be kept constantly over the abdomen.

In favorable cases the fever subsides after four to seven days, the pain disappears, but there may be no movement of the bowels, and a distinct tumor may still be felt, which we may suspect is in part due to fecal accumulation. My own practice is to gradually withdraw the opium, and to continue to restrict the diet carefully so as to prevent any considerable increase of the accumulation or any forcible peristalsis; but if, after several days further, the bowels continue closed, it is necessary to begin the use of a mild laxative to favor increased intestinal secretion, and the gradual softening and dislodgment of the accumulated feces. For this purpose the following may be used:—

Ext. colocynth. comp. gr. xxiv;
Ext. belladonnæ, gr. ij;
Ext nucis vomicæ, gr. iij;
Ol. carui, gtt. viij.
Ft. mas. et div. in pil. no. xxiv.

One every three or four hours, for an adult, until an action of the bowels is secured.

Or the following, which gave excellent results in a desperately bad case of typhlitis in a middle-aged woman, where, after the relief of the vomiting, pain, and fever, a large cæcal tumor, evidently in large part fecal, remained for days:—

Tr. opii deodoratæ, gtt. xl;
Ol. terebinthinæ, gtt. cxx;
Ol. ricini, f℥ij;
Pulv. acaciæ, sacchari, āā q. s.;
Aq. menth. viridis, q. s. ad f℥v.
Ft. mist. S. Dessertspoonful every three hours until the bowels are moved.

Having then conducted the case beyond the dangers of the acute stage, including that of abscess formation, there remains the extremely important question of the management of convalescence so as to guard against relapses and the gradual establishment of chronic typhlitis. Judging from the large number of cases of relapse, and of the chronic form of the disease which come under my observation, I am satisfied that the importance of this part of the treatment is not sufficiently appreciated.

It must be borne in mind, that, so long as the slightest swelling or thickening remains in the iliac fossa, there is a morbid condition which will readily be excited to activity on the slightest over-exertion or indiscretion; and, moreover, that even where no swelling can be detected, there may be ulceration of the cæcum which will reveal its presence, if at all, only by slight intermittent diarrhœa and the discharge of mucus; and, finally, that even where no such serious lesion remains, there may be a subacute catarrh of the cæcum left behind. Not until there is complete restoration of weight, strength, and digestive tone, should our precautions as to diet, exercise, and hygienic care be relaxed. A few additional weeks or months devoted to securing complete cure will save an incalculable amount of future trouble and danger.

If, however, such precautions have been neglected, or if, in spite of them, the case passes into a chronic form with occasional exacerbations, and with evidences of continuous cæcal irritation, there is presented for treatment one of the most troublesome of curable affections. The dangers are great: at any time an acute exacerbation may induce or hasten ulceration, and lead to perforation and abscess; slow thickening and contraction may progress until organic obstruction ensues; or slowly spreading peritonitis may be developed without perforation. It is essential, therefore, that the patient, who frequently feels able to continue his usual avocations, although below par and liable to transient attacks of cæcal trouble, shall recognize the necessity for a complete cure, and abandon himself to the regimen required. It is not necessary to enter here into all the details of the treatment required for the cure of this, as of other serious chronic intestinal catarrhs. It includes the choice of suitable residence; the direction of carefully regulated exercise,

with abundant rest; the use of proper clothing, with especial care to protect the abdominal region by a broad flannel belt; prolonged mild counter-irritation; courses of alterative astringents, such as nitrate of silver, chloride of gold and soda, or iron with minute doses of bichloride of mercury; together with nutrients such as cod-liver oil; but, above all, it is essential that most scrupulous care shall be paid to the diet. In all cases this is the most important part of the internal treatment, and not rarely a cure can be effected only by a protracted course of milk diet, or of minced meat, lightly broiled and taken in connection with the free use of hot water, but with very little starchy food. The partially digested food preparations, made after the receipts of Roberts, are often of extreme value. When complete control of the patient can thus be secured, the prognosis, even of cases of long standing, where numerous relapses have occurred and considerable thickening of the cæcal tissues exists, is by no means unfavorable, although long and assiduous treatment will be required to obtain a cure. The prognosis of typhlitis in general has, perhaps, been sufficiently indicated; and the space at my disposal forbids me to enter upon the various interesting questions as to the differential diagnosis of the acute and chronic forms of cæcal disease.